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United States Patent [19]**Kawai et al.**[11] **Patent Number:** **6,025,892**[45] **Date of Patent:** **Feb. 15, 2000**

[54] **ACTIVE MATRIX SUBSTRATE WITH
REMOVAL OF PORTION OF INSULATING
FILM OVERLAPPING SOURCE LINE AND
PIXEL ELECTRODE AND METHOD FOR
PRODUCING THE SAME**

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5,084,905	1/1992	Sasaki et al.	357/71
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FOREIGN PATENT DOCUMENTS

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[57]

ABSTRACT

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[51] **Int. Cl.⁷** **G02F 1/136**

[52] **U.S. Cl.** **349/43**; 349/42; 349/39;
349/192; 438/30; 438/937

[58] **Field of Search** 438/937, 30; 349/42,
349/43, 192, 39

[56] References Cited**U.S. PATENT DOCUMENTS**

5,054,887 10/1991 Kato et al. 349/39

An active matrix substrate of the present invention includes: a substrate; a plurality of first lines formed on the substrate to be parallel to each other; an insulating film covering the first lines; a plurality of second lines formed on the substrate extending to cross the first lines with the insulating film interposed therebetween; a plurality of switching elements provided near respective crossings of the first lines and the second lines; and a plurality of pixel electrodes which are arranged in a matrix on the insulating film and which are connected to the switching elements, respectively. The insulating film is partially removed prior to forming the second lines and the pixel electrodes so that the removed portions of the insulating film correspond to the gaps.

28 Claims, 13 Drawing Sheets